Space Weather Forecast

Issued on Monday, 01 April 2024 at 01:11 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Activity declining with a decreasing chance of Moderate flares. Active to G1 Minor Storm intervals expected day 3 (02 Apr) due to arrival coronal hole sourced fast winds.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Activity has been Low with only small common class flare activity observed, the strongest from the large sunspot that has now rotated off the Earth-side. However some magnetic looping from this region is still visible in SDO imagery from over the southwest limb. There are four sunspot regions visible on the Earth-side disc, however all are small and simple. The most notable growth was in a newly emerged region near the northwest limb.

No Earth-directed coronal mass ejections (CMEs) were observed.

Solar Wind / Geomagnetic Activity: Solar winds showed the arrival of fast solar winds from at least one coronal hole. Solar wind speeds rose to be slightly elevated to elevated at 480-550 km/s from 31/0100-1230 UTC, then eased briefly to 400-450 by 31/1500UTC, before a further slight enhancement from 31/1800 UTC to peak 500 km/s. Total Interplanetary Magnetic Field (IMF) was briefly Moderate at first, but soon eased to Weak to Moderate levels from 31/0100 UTC. The north-south component, was initially Moderately negative (southward) but soon rotated to be mainly positive (northward) from 31/0200 UTC, with only brief weak negative interludes. Geomagnetic activity was mainly Quiet (Kp1-2) but with one Active (Kp4) interval 31/0000-03000 UTC.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) was at background with no solar radiation storms observed.

Four-Day Space Weather Forecast Summary

Solar Activity: Declining as the large sunspot continues to move onto the far-side with no other notable sunspot regions currently on the disc. There is a chance that any Moderate, perhaps Strong, flares could still be observed from the Earth-side early day 1 (01 Apr), but otherwise Low activity is expected

Solar Wind / Geomagnetic Activity: There are no Earth-directed CMEs, although this is only moderate confidence with a small chance of a glancing arrival on day 2 (02 April) from a weak CME that left the Sun on 29 Mar. Otherwise current slightly elevated solar winds, due to ongoing coronal hole fast winds are expected to gradually ease day 1-2 (01-02 Apr). The next enhancement, from the influence of further coronal holes, is then expected day 3 (03 Apr) with any enhancement gradually easing from day 4 (04 Apr_. Geomagnetic activity is forecast to be mainly Quiet on day 1-2 (01-02 Apr), increasing to be Active with G1 Minor Storm intervals with the fast wind onset day 3 and perhaps early day 4 (03-04 Apr).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is expected to be at background, but with a slight chance of enhancement above the S1/Minor Radiation storm level given any notable flares from the large sunspot around the southwest limb.

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Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	5	50	20
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	No	30	10	20	20
Very Active	R3 to R5 X	No	5	1	1	1

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	15	10	5	5
Very Active	≥ S3 *	No	1	1	1	1

* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)

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